

The Expanding Core and Co-location Space Geodesy Network and the Importance of High Latitude Sites.

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Several initiatives are underway that should make substantial improvement over the next decade to the international space geodesy network as the international community works toward the Global Geodetic Observing System (GGOS) 2020 goal of 32 globally distributed Core Sites with co-located VLBI, SLR, GNSS and DORIS. The most stringent requirement is the improvement of the reference frame for measurements of sea level, but many other applications are close behind. In addition to the three Core Sites already installed within the Russian territory, the Russian Space Agency and the Russian Academy of Science are moving forward with an implementation of six additional SLR systems and a number of GNSS receivers to sites outside Russia to expand GNSS tracking and support GGOS. The NASA Space Geodesy Program has completed its prototype development phase and is now embarking on an implementation phase that is planning for deployment of 6 – 10 core sites in key geographic locations to support the global network. Other agencies are also in the process of upgrading and implementing sites in Europe, Asia and Africa. Site evaluation studies are in progress, looking at some new potential locations, and there are ongoing discussions for partnership arrangements with interested agencies. Work continues on the site layout design to avoid RF interference issues among co-located instruments and with external communications and media systems. The projected placement of new and upgraded sites is guided by simulations studies that will help optimize the global distribution of core geodetic observatories and lead to the improvement of data products. Of particular interest are high latitude sites including Antarctica that will e.g. strengthen SLR coverage over the poles for the full suite of satellites from LEO altimeter and gravity field missions, LAGEOS and GNSS for the improvement of the reference frame and for improved positioning. Another benefit of a core site in the Antarctica would be the observation of high declination Southern radio sources by VLBI that would strengthen the celestial reference frame considerably.

This talk will give an update on the current state of expansion of the global network and the projection for the network configuration that we forecast over the next 10 years.